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## **Cold Forming Process for Manufacturing Ball Pivots**

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### **Patent Claims**

1. A cold forming process for manufacturing ball pivots with a ball area, a cone area and a thread area for installation in ball and socket joints, in which a ball pivot blank (1) with a shaped cone area (3) and cylindrical areas for the thread (2) and for the ball (5) is first manufactured from a bar-shaped semifinished bar stock by extrusion, wherein the extrusion flash is arranged at the free end of the area (5) provided for forming the ball and in which the ball area is subsequently formed in at least one other operation by means of a rolling process by rolling forming bodies.
2. A process in accordance with claim 1, characterized in that the rolling process is a triggered synchronized rolling process.
3. A process in accordance with claim 1 or 2, characterized in that the thread area is formed simultaneously with the forming of the ball area into its final shape.
4. A process in accordance with one of the claims 1 through 3, characterized in that the cone area (4) formed in the preceding pressing process is smoothed simultaneously with the forming of the ball area into its final shape.
5. A process in accordance with claims 1 through 4, characterized in that a blind hole-

like recess (7), which is opened on the front side, is pressed into the free end of the ball pivot blank (1) intended for forming the ball area before the rolling operation.

6. A process in accordance with claim 5, characterized in that the recess (7) is formed by the upper die used during pressing.

5           7. A process in accordance with one of the claims 1 through 6, characterized in that a cylindrical neck area (4) is formed at first during rolling between the cone area (3) and the cylindrical area (5) provided for forming the ball.

8. A process in accordance with one of the claims 1 through 7, characterized in that a flat-jaw rolling process is used as the rolling process.

10           9. A process in accordance with one of the claims 1 through 7, characterized in that a round-jaw rolling process is used as the rolling process.

10. A process in accordance with claim 9, characterized in that the round-jaw rollers are designed as rolling cylinders (21, 22), which are located next to one another on parallel axes of rotation (19, 20), and whose outer contour has half of the negative form of the contour of the ball pivot to be rolled, wherein the ball pivot is arranged in a roll gap (11) between the rolling  
15 cylinders (21, 22 and 25, 26) during the rolling process.

11. A process in accordance with claim 9 or 10, characterized in that the round-jaw rollers are formed by a rolling cylinder (23), on the one hand, and by a hollow cylinder concentrically surrounding the rolling cylinder (24), on the other hand, wherein the outer contour  
20 of the rolling cylinder (23) and the inner contour of the hollow cylinder (24) form half of a

negative form of the contour form of the ball pivot to be rolled, which said negative form is variable over the outer circumference and the inner circumference, and wherein the ball pivot is arranged in the roll gap (11) between the outer contour and the inner contour of the rolling cylinder (23) and the hollow rolling cylinder (24) during the rolling process.